



gtax.718.ST25.txt

SEQUENCE LISTING

<110> Hua, Shaobing

Pauling, Michelle H.

Zhu, Li

<120> HUMAN MONOCLONAL ANTIBODIES AGAINST CORECEPTORS FOR HUMAN IMMUNODEFICIENCY VIRUS

<130> 25636-718

<160> 60

<170> PatentIn version 3.1

<210> 1

<211> 352

<212> PRT

<213> Homo sapiens

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35 40 45

Met Leu Val Ile Leu Ile Leu Ile Asn Cys Lys Arg Leu Lys Ser Met  
50 55 60

Thr Asp Ile Tyr Leu Leu Asn Leu Ala Ile Ser Asp Leu Phe Phe Leu  
65 70 75 80

Leu Thr Val Pro Phe Trp Ala His Tyr Ala Ala Ala Gln Trp Asp Phe  
85 90 95

Gly Asn Thr Met Cys Gln Leu Leu Thr Gly Leu Tyr Phe Ile Gly Phe  
100 105 110

Phe Ser Gly Ile Phe Phe Ile Ile Leu Leu Thr Ile Asp Arg Tyr Leu  
115 120 125

Ala Val Val His Ala Val Phe Ala Leu Lys Ala Arg Thr Val Thr Phe  
130 135 140

Gly Val Val Thr Ser Val Ile Thr Trp Val Val Ala Val Phe Ala Ser  
145 150 155 160

Leu Pro Gly Ile Ile Phe Thr Arg Ser Gln Lys Glu Gly Leu His Tyr  
165 170 175

Thr Cys Ser Ser His Phe Pro Tyr Ser Gln Tyr Gln Phe Trp Lys Asn  
180 185 190

Phe Gln Thr Leu Lys Ile Val Ile Leu Gly Leu Val Leu Pro Leu Leu  
195 200 205

Val Met Val Ile Cys Tyr Ser Gly Ile Leu Lys Thr Leu Leu Arg Cys  
210 215 220

Arg Asn Glu Lys Lys Arg His Arg Ala Val Arg Leu Ile Phe Thr Ile  
225 230 235 240

Met Ile Val Tyr Phe Leu Phe Trp Ala Pro Tyr Asn Ile Val Leu Leu  
245 250 255

Leu Asn Thr Phe Gln Glu Phe Phe Gly Leu Asn Asn Cys Ser Ser Ser  
260 265 270

Asn Arg Leu Asp Gln Ala Met Gln Val Thr Glu Thr Leu Gly Met Thr  
275 280 285

His Cys Cys Ile Asn Pro Ile Ile Tyr Ala Phe Val Gly Glu Lys Phe  
290 295 300

Arg Asn Tyr Leu Leu Val Phe Phe Gln Lys His Ile Ala Lys Arg Phe  
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Cys Lys Cys Cys Ser Ile Phe Gln Gln Glu Ala Pro Glu Arg Ala Ser  
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<211> 17

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<210> 3

<211> 32

<212> PRT

<213> Homo sapiens

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<210> 4

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<213> Artificial Sequence

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<223> G4S Linker

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<213> Homo sapiens

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Ser Glu Pro Cys Gln Lys Ile Asn Val Lys Gln Ile Ala Ala Arg Leu  
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Leu Pro Pro Leu  
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<211> 32

<212> PRT

<213> Homo sapiens

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Pro Tyr Ser Gln Tyr Gln Phe Trp Lys Asn Phe Gln Thr Leu Lys Ile  
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<213> Artificial Sequence

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<223> Primer

<400> 15

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<210> 17

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<212> PRT

<213> Artificial Sequence

<220>

<223> Clone 15.186.35

<400> 17

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Thr Leu Thr Leu Thr Cys Thr Leu Ser Gly Phe Ser Leu Ser Thr Ser  
20 25 30

Gly Val Ser Val Gly Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu  
35 40 45

Trp Leu Ala Ser Ile Asn Trp Asn Asp Asp Lys Cys Tyr Ser Pro Ser  
50 55 60

Leu Lys Ser Arg Leu Thr Ile Thr Lys Asp Thr Pro Lys Asn Gln Val  
65 70 75 80

Val Leu Ala Met Ser Asn Met Asp Pro Ala Asp Thr Ala Thr Tyr Ser  
85 90 95

Cys Ala Leu Asp Met Pro Pro His Asp Ser Gly Pro Gln Ser Phe Asp  
100 105 110

Ala Ser Asp Val Trp Gly Pro Gly Thr Met Val Thr Val Ser Ser Gly  
115 120 125

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly  
130 135 140

Gly Gly Ser Ser Tyr Glu Leu Met Gln Leu Pro Ser Val Ser Val Ser  
145 150 155 160

Pro Gly Gln Thr Ala Ser Ile Thr Cys Ser Gly Asp Asn Leu Gly Asp  
165 170 175

Lys Tyr Ala Cys Trp Tyr Gln Gln Lys Pro Gly Arg Ser Pro Val Leu  
180 185 190

Val Ile Tyr Gly Asp Asn Lys Arg Pro Ser Gly Ile Pro Glu Arg Phe  
195 200 205

Ser Gly Ser Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr  
210 215 220

Gln Ala Met Asp Glu Ala Asp Tyr Tyr Cys Gln Ala Trp Asp Thr Ser  
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Thr Ala Val Phe Gly Thr Gly Thr Lys Leu Thr Val Leu  
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<210> 18

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<212> DNA

<213> Artificial Sequence

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<223> Clone 15.150.11

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ccaggggagg gactggagtg gattggttc atcttctcg atgggagcac caactacaac   180
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gggaccacgg tcaccgtccc ctgaggcggc ggtggatcag gcggcggagg atctggcgga   420
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aatcagcggc cctcaggggt ccctgaccga ttctctggct tcaagtctgg cacctcagcc   660
tccttggtca tcagtggcct ccagtctgag gatgaggctg attattattg tgcagcatgg   720
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<212> PRT

<213> Artificial Sequence

<220>

<223> Clone 15.150.11

<400> 19

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Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Gly His Asp  
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Glu Gly Leu Glu Trp Ile  
35 40 45

Gly Phe Ile Phe Phe Asp Gly Ser Thr Asn Tyr Asn Pro Ser Leu Asn  
50 55 60

Gly Arg Val Thr Ile Ser Leu Asp Thr Ser Lys Asn Gln Leu Ser Leu  
65 70 75 80

Arg Leu Thr Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Phe Cys Ala  
85 90 95

Arg Leu Lys Gly Ala Trp Leu Leu Ser Glu Pro Pro Tyr Phe Ser Ser  
100 105 110

Asp Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Pro Ser  
115 120 125

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly  
130 135 140

Gly Gly Gly Ser Asn Phe Met Leu Thr Gln Pro Pro Ser Ala Ser Gly  
145 150 155 160

Thr Pro Gly Gln Arg Val Ser Ile Ser Cys Ser Gly Ser Ser Ser Asp  
165 170 175

Ile Gly Ser Asn Thr Val Asn Trp Tyr Gln Gln Leu Pro Gly Thr Ala  
180 185 190

Pro Lys Leu Leu Ile Tyr Ser Asn Asn Gln Arg Pro Ser Gly Val Pro  
195 200 205

Asp Arg Phe Ser Gly Phe Lys Ser Gly Thr Ser Ala Ser Leu Val Ile  
210 215 220

Ser Gly Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Ala Trp  
225 230 235 240

Asp Glu Ser Leu Asn Gly Val Val Phe Gly Gly Gly Pro Arg  
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<210> 20

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<213> Artificial Sequence

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ccgtccctcg acggtcgagt caccatatca ttagacacat ctaccaacca gatctccctt 240  
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gccccaacgg gcggtggtgg atcaggcggc ggaggatctg gcggaggtgg cagcgggtgt 420  
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aaagtcagca tctctgcaa agccagccga gacgttgatg atgatgtgaa ctggtaccaa 540  
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atcgattctg aggatgctgc atattatttc tgtctacaac atgataattt cccgctcacc 720

ttcggcggag ggaccaaggt ggagatcaaa 750

<210> 21

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<212> PRT

<213> Artificial Sequence

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<223> Clone 15.150.12

<400> 21

Gln Val Gln Leu Gln Gln Trp Gly Ala Gly Leu Leu Lys Ser Trp Gly  
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Thr Leu Ser Leu Thr Cys Ala Val Ser Gly Ala Ser Phe Ser Gly Tyr  
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile  
35 40 45

Gly Glu Ile Asn His Arg Gly Ser Thr Thr Tyr Asn Pro Ser Leu Asp  
50 55 60

Gly Arg Val Thr Ile Ser Leu Asp Thr Ser Thr Asn Gln Ile Ser Leu  
65 70 75 80

Lys Leu Thr Ser Met Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala  
85 90 95

Arg Thr Val Ala Gly Thr Ser Asp Tyr Trp Gly Gln Gly Thr Leu Val  
100 105 110

Thr Val Ser Ser Gly Ser Ala Ser Ala Pro Thr Gly Gly Gly Ser  
115 120 125

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Lys  
130 135 140

Thr Thr Leu Thr Gln Ser Pro Ala Phe Met Ser Ala Thr Pro Gly Asp  
145 150 155 160

Lys Val Ser Ile Ser Cys Lys Ala Ser Arg Asp Val Asp Asp Asp Val  
165 170 175

Asn Trp Tyr Gln Gln Arg Pro Gly Glu Ala Pro Ile Phe Ile Ile Glu  
180 185 190

Asp Ala Thr Thr Leu Val Pro Gly Ile Ser Pro Arg Phe Ser Gly Ser  
195 200 205

Gly Tyr Gly Thr Asp Phe Thr Leu Thr Ile Asn Asn Ile Asp Ser Glu  
210 215 220

Asp Ala Ala Tyr Tyr Phe Cys Leu Gln His Asp Asn Phe Pro Leu Thr  
225 230 235 240

Phe Gly Gly Gly Thr Lys Val Glu Ile Lys  
245 250

<210> 22

<211> 759

<212> DNA

<213> Artificial Sequence

<220>

<223> Clone 15.150.24

<400> 22

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caatactatt atgatactag tggtcagcca tactactttg acttctgggg ccagggcacc 360  
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gaaacagga tccatcaag gttcagtga agtggatctg ggacagattt tctctcacc 660  
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<210> 23

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<212> PRT

<213> Artificial Sequence

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<223> Clone 15.150.24

<400> 23

Gln Val Thr Leu Lys Glu Ser Gly Pro Thr Leu Val Lys Pro Thr Gln  
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Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Arg Thr Thr  
20 25 30

Gly Glu Gly Val Gly Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu  
35 40 45



Trp Leu Ala Leu Ile Tyr Trp Asp Asp Asp Lys Arg Tyr Ser Pro Ser  
50 55 60

Leu Lys Ser Arg Leu Thr Ile Thr Lys Asp Thr Ser Lys Lys Gln Val  
65 70 75 80

Val Leu Thr Met Thr Asn Val Asp Pro Ala Asp Thr Ala Thr Tyr Tyr  
85 90 95

Cys Thr His Glu Gln Tyr Tyr Tyr Asp Thr Ser Gly Gln Pro Tyr Tyr  
100 105 110

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly Gly  
115 120 125

Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly  
130 135 140

Gly Ser Asn Ile Gln Val Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser  
145 150 155 160

Val Gly Asp Arg Val Thr Met Thr Cys Arg Ala Ser Gln Asp Ile Arg  
165 170 175

Lys Asn Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Val  
180 185 190

Leu Ile Tyr Asp Ala Ser Asp Leu Glu Thr Gly Ile Pro Ser Arg Phe  
195 200 205

Ser Gly Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Leu  
210 215 220

Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Ser Asp Tyr Leu  
225 230 235 240

Pro Leu Thr Phe Gly Gly Gly Thr Lys Val Asp Ile Lys  
245 250

<210> 24

<211> 759

<212> DNA

<213> Artificial Sequence

<220>

<223> Clone 15.186.35 Variant

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<213> Artificial Sequence

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<223> Clone 15.186.35 Variant

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Thr Leu Thr Leu Thr Cys Thr Leu Ser Gly Phe Ser Leu Ser Thr Ser  
20 25 30

Gly Val Ser Val Gly Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu  
35 40 45

Trp Leu Ala Ser Ile Asn Trp Asn Asp Asp Lys Cys Tyr Ser Pro Ser  
50 55 60

Leu Lys Ser Arg Leu Thr Ile Thr Lys Asp Thr Pro Lys Asn Gln Val  
65 70 75 80

Val Leu Ala Met Ser Asn Met Asp Pro Ala Asp Thr Ala Thr Tyr Ser  
85 90 95

Cys Ala Leu Asp Met Pro Pro His Asp Ser Gly Pro Gln Ser Phe Asp  
100 105 110

Ala Ser Asp Val Trp Gly Pro Gly Thr Met Val Thr Val Ser Ser Gly  
115 120 125

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly  
130 135 140

Gly Gly Ser Ser Tyr Glu Leu Met Gln Leu Pro Ser Val Ser Val Ser  
145 150 155 160

Pro Gly Gln Thr Ala Ser Ile Thr Cys Ser Gly Asp Asn Leu Gly Asp  
165 170 175

Lys Tyr Ala Cys Trp Tyr Gln Gln Lys Pro Gly Arg Ser Pro Val Leu  
180 185 190

Val Ile Tyr Gly Asp Asn Lys Arg Pro Ser Gly Ile Pro Glu Arg Phe  
195 200 205

Ser Gly Ser Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr  
210 215 220

Gln Ala Met Asp Glu Ala Asp Tyr Tyr Cys Gln Ala Trp Asp Thr Ser  
225 230 235 240

Thr Ala Val Phe Gly Thr Gly Thr Lys Leu Thr Val Leu  
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<210> 26

<211> 774

<212> DNA

<213> Artificial Sequence

<220>

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ccctccctca acggtcgagt caccatctca ctcgacacgt cgaagaatca gctctccctg 240

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<212> PRT

<213> Artificial Sequence

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<223> Clone 15.150.11 Variant

<400> 27

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Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Gly His Asp  
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Glu Gly Leu Glu Trp Ile  
35 40 45

Gly Phe Ile Phe Phe Asp Gly Ser Thr Asn Tyr Asn Pro Ser Leu Asn  
50 55 60

Gly Arg Val Thr Ile Ser Leu Asp Thr Ser Lys Asn Gln Leu Ser Leu  
65 70 75 80

Arg Leu Thr Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Phe Cys Ala  
85 90 95

Arg Leu Lys Gly Ala Trp Leu Leu Ser Glu Pro Pro Tyr Phe Ser Ser  
100 105 110

Asp Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser  
115 120 125

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly  
130 135 140

Gly Gly Gly Ser Asn Phe Met Leu Thr Gln Pro Pro Ser Ala Ser Gly  
145 150 155 160

Thr Pro Gly Gln Arg Val Ser Ile Ser Cys Ser Gly Ser Ser Ser Asp  
165 170 175

Ile Gly Ser Asn Thr Val Asn Trp Tyr Gln Gln Leu Pro Gly Thr Ala  
180 185 190

Pro Lys Leu Leu Ile Tyr Ser Asn Asn Gln Arg Pro Ser Gly Val Pro  
195 200 205

Asp Arg Phe Ser Gly Phe Lys Ser Gly Thr Ser Ala Ser Leu Val Ile  
210 215 220

Ser Gly Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Ala Trp  
225 230 235 240

Asp Glu Ser Leu Asn Gly Val Val Phe Gly Gly Gly Thr Lys Val Thr  
245 250 255

Val Leu

<210> 28

<211> 750

<212> DNA

<213> Artificial Sequence

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ccagggaagg ggctggagtg gattggggag atcaatcatc gtggaagcac tacctacaac 180  
ccgtccctcg acggtcgagt caccatatca ttagacacat ctaccaacca gatctccctt 240  
aaactgacct ctatgaccgc cgcggaacg gccgtgtatt actgtgcgag gacagtggct 300  
ggtagtagtg actactgggg ccagggaacc ctggtcaccg tttctcagg gagtgcattc 360  
gccccaacgg gcggtggtgg atcaggcggc ggaggatctg gcggaggtgg cagcgggtgt 420  
ggaggcagtg aaacgacct cacgcagtct ccagcattca tgcagcgac tccaggagac 480  
aaagtcagca tctctgcaa agccagccga gacgttgatg atgatgtgaa ctggtaccaa 540  
cagagaccag gagaagctcc tattttcatt attgaagatg ctactactct cgttctgga 600  
atctcacctc gattcagtg cagcgggtat ggaaccgatt ttaccctcac aattaataac 660  
atcgattctg aggatgctgc atattatttc tgtctacaac atgataattt cccgctcacc 720  
ttcggcggag ggaccaaggt ggagatcaaa 750

<210> 29

<211> 250

<212> PRT

<213> Artificial Sequence

<220>

<223> Clone 15.150.12 Variant

<400> 29

Gln Val Gln Leu Gln Gln Trp Gly Ala Gly Leu Leu Lys Ser Trp Gly  
1 5 10 15

Thr Leu Ser Leu Thr Cys Ala Val Ser Gly Ala Ser Phe Ser Gly Tyr  
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile  
35 40 45

Gly Glu Ile Asn His Arg Gly Ser Thr Thr Tyr Asn Pro Ser Leu Asp  
50 55 60

Gly Arg Val Thr Ile Ser Leu Asp Thr Ser Thr Asn Gln Ile Ser Leu  
65 70 75 80

Lys Leu Thr Ser Met Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala  
85 90 95

Arg Thr Val Ala Gly Thr Ser Asp Tyr Trp Gly Gln Gly Thr Leu Val  
100 105 110

Thr Val Ser Ser Gly Ser Ala Ser Ala Pro Thr Gly Gly Gly Gly Ser  
115 120 125

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu  
130 135 140

Thr Thr Leu Thr Gln Ser Pro Ala Phe Met Ser Ala Thr Pro Gly Asp  
145 150 155 160

Lys Val Ser Ile Ser Cys Lys Ala Ser Arg Asp Val Asp Asp Asp Val  
165 170 175

Asn Trp Tyr Gln Gln Arg Pro Gly Glu Ala Pro Ile Phe Ile Ile Glu  
180 185 190

Asp Ala Thr Thr Leu Val Pro Gly Ile Ser Pro Arg Phe Ser Gly Ser  
195 200 205

Gly Tyr Gly Thr Asp Phe Thr Leu Thr Ile Asn Asn Ile Asp Ser Glu  
210 215 220



Asp Ala Ala Tyr Tyr Phe Cys Leu Gln His Asp Asn Phe Pro Leu Thr  
225 230 235 240

Phe Gly Gly Gly Thr Lys Val Glu Ile Lys  
245 250

<210> 30

<211> 759

<212> DNA

<213> Artificial Sequence

<220>

<223> Clone 15.150.24 Variant

<400> 30

caggtcacct tgaaggagtc tggctctacg ctggtgaaac ccacacagac cctcacgctg 60  
acctgcacct tctctgggtt ctactcaga actactggag aggggtgtggg ctgggtccgt 120  
cagccccag gaaaggccct ggaatggctt gcactcattt attgggatga tgataagcgc 180  
tacagcccat ctctgaagag caggctcacc atcaccaagg acacctcaa aaagcaggtg 240  
gtccttaca tgaccaacgt ggaccagcg gacacagcca cctattactg tacacacgag 300  
caatactatt atgatactag tggtcagcca tactactttg acttctgggg ccagggcacc 360  
ctggtcaccg tctctcagg cggtggtgga tcaggcggcg gaggatctgg cggaggtggc 420  
agcggtggtg gaggcagtaa catccaggtg acccagtctc catctccct gtctgcatct 480  
gtaggagaca gagtcacat gacttgccgg gcgagtcagg acattaggaa gaatttaa 540  
tggtatcagc aaaaaccagg gaaagcccct aaggtcctga tctacgatgc atccgatttg 600  
gaaacagga tccatcaag gttcagtga agtggatctg ggacagattt tctctcacc 660  
atcagcagcc tgcagcctga agatattgca acatactact gtcaacagtc tgattattta 720  
ccgctcactt tcggcggagg gaccaaagtg gatatcaaa 759

<210> 31

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> Clone 15.150.24 Variant

<400> 31

Gln Val Thr Leu Lys Glu Ser Gly Pro Thr Leu Val Lys Pro Thr Gln  
1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Arg Thr Thr  
20 25 30

Gly Glu Gly Val Gly Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu  
35 40 45

Trp Leu Ala Leu Ile Tyr Trp Asp Asp Asp Lys Arg Tyr Ser Pro Ser  
50 55 60

Leu Lys Ser Arg Leu Thr Ile Thr Lys Asp Thr Ser Lys Lys Gln Val  
65 70 75 80

Val Leu Thr Met Thr Asn Val Asp Pro Ala Asp Thr Ala Thr Tyr Tyr  
85 90 95

Cys Thr His Glu Gln Tyr Tyr Tyr Asp Thr Ser Gly Gln Pro Tyr Tyr  
100 105 110

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly Gly  
115 120 125

Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly  
130 135 140

Gly Ser Asn Ile Gln Val Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser  
145 150 155 160

Val Gly Asp Arg Val Thr Met Thr Cys Arg Ala Ser Gln Asp Ile Arg  
165 170 175

Lys Asn Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Val  
180 185 190

Leu Ile Tyr Asp Ala Ser Asp Leu Glu Thr Gly Ile Pro Ser Arg Phe  
195 200 205

Ser Gly Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Leu  
210 215 220

Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Ser Asp Tyr Leu  
225 230 235 240

Pro Leu Thr Phe Gly Gly Gly Thr Lys Val Asp Ile Lys  
245 250

<210> 32

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> VH CDR2

<220>

<221> MISC\_FEATURE

<222> (4)..(4)

<223> X = Asparagine or Threonine

<400> 32

Gly Ser Thr Xaa Tyr Asn Pro Ser Leu  
1 5

<210> 33

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> VL CDR2

<220>

<221> MISC\_FEATURE

<222> (3)..(4)

<223> X3 = Asparagine or Threonine  
X4 = Threonine or Aspartic acid

<400> 33

Asp Ala Xaa Xaa Leu  
1 5

<210> 34

<211> 127

<212> PRT

<213> Homo sapiens

<400> 34

Gln Val Thr Leu Lys Glu Ser Gly Pro Thr Leu Val Lys Pro Thr Gln  
1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Leu Ser Gly Phe Ser Leu Ser Thr Ser  
Page 28

20 25 30

Gly Val Ser Val Gly Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu  
35 40 45

Trp Leu Ala Ser Ile Asn Trp Asn Asp Asp Lys Cys Tyr Ser Pro Ser  
50 55 60

Leu Lys Ser Arg Leu Thr Ile Thr Lys Asp Thr Pro Lys Asn Gln Val  
65 70 75 80

Val Leu Ala Met Ser Asn Met Asp Pro Ala Asp Thr Ala Thr Tyr Ser  
85 90 95

Cys Ala Leu Asp Met Pro Pro His Asp Ser Gly Pro Gln Ser Phe Asp  
100 105 110

Ala Ser Asp Val Trp Gly Pro Gly Thr Met Val Thr Val Ser Ser  
115 120 125

<210> 35  
<211> 106  
<212> PRT  
<213> Homo sapiens

<400> 35  
Ser Tyr Glu Leu Met Gln Leu Pro Ser Val Ser Val Ser Pro Gly Gln  
1 5 10 15

Thr Ala Ser Ile Thr Cys Ser Gly Asp Asn Leu Gly Asp Lys Tyr Ala  
20 25 30

Cys Trp Tyr Gln Gln Lys Pro Gly Arg Ser Pro Val Leu Val Ile Tyr  
35 40 45

Gly Asp Asn Lys Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser  
Page 29

50 55 60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr Gln Ala Met  
65 70 75 80

Asp Glu Ala Asp Tyr Tyr Cys Gln Ala Trp Asp Thr Ser Thr Ala Val  
85 90 95

Phe Gly Thr Gly Thr Lys Leu Thr Val Leu  
100 105

<210> 36

<211> 126

<212> PRT

<213> Homo sapiens

<400> 36

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu  
1 5 10 15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Gly His Asp  
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Glu Gly Leu Glu Trp Ile  
35 40 45

Gly Phe Ile Phe Phe Asp Gly Ser Thr Asn Tyr Asn Pro Ser Leu Asn  
50 55 60

Gly Arg Val Thr Ile Ser Leu Asp Thr Ser Lys Asn Gln Leu Ser Leu  
65 70 75 80

Arg Leu Thr Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Phe Cys Ala  
85 90 95

Arg Leu Lys Gly Ala Trp Leu Leu Ser Glu Pro Pro Tyr Phe Ser Ser  
Page 30

100 105 110

Asp Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val  
115 120 125

<210> 37

<211> 104

<212> PRT

<213> Homo sapiens

<400> 37

Asn Phe Met Leu Thr Gln Pro Pro Ser Ala Ser Gly Thr Pro Gly Gln  
1 5 10 15

Arg Val Ser Ile Ser Cys Ser Gly Ser Ser Ser Asp Ile Gly Ser Asn  
20 25 30

Thr Val Asn Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu  
35 40 45

Ile Tyr Ser Asn Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser  
50 55 60

Gly Phe Lys Ser Gly Thr Ser Ala Ser Leu Val Ile Ser Gly Leu Gln  
65 70 75 80

Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Ala Trp Asp Glu Ser Leu  
85 90 95

Asn Gly Val Val Phe Gly Gly Gly  
100

<210> 38

<211> 116

<212> PRT

<213> Homo sapiens

<400> 38

Gln Val Gln Leu Gln Gln Trp Gly Ala Gly Leu Leu Lys Ser Trp Gly  
1 5 10 15

Thr Leu Ser Leu Thr Cys Ala Val Ser Gly Ala Ser Phe Ser Gly Tyr  
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile  
35 40 45

Gly Glu Ile Asn His Arg Gly Ser Thr Thr Tyr Asn Pro Ser Leu Asp  
50 55 60

Gly Arg Val Thr Ile Ser Leu Asp Thr Ser Thr Asn Gln Ile Ser Leu  
65 70 75 80

Lys Leu Thr Ser Met Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala  
85 90 95

Arg Thr Val Ala Gly Thr Ser Asp Tyr Trp Gly Gln Gly Thr Leu Val  
100 105 110

Thr Val Ser Ser  
115

<210> 39

<211> 106

<212> PRT

<213> Homo sapiens

<400> 39

Thr Thr Leu Thr Gln Ser Pro Ala Phe Met Ser Ala Thr Pro Gly Asp  
Page 32



1            5            10            15

Lys Val Ser Ile Ser Cys Lys Ala Ser Arg Asp Val Asp Asp Asp Val  
          20            25            30

Asn Trp Tyr Gln Gln Arg Pro Gly Glu Ala Pro Ile Phe Ile Ile Glu  
          35            40            45

Asp Ala Thr Thr Leu Val Pro Gly Ile Ser Pro Arg Phe Ser Gly Ser  
          50            55            60

Gly Tyr Gly Thr Asp Phe Thr Leu Thr Ile Asn Asn Ile Asp Ser Glu  
65            70            75            80

Asp Ala Ala Tyr Tyr Phe Cys Leu Gln His Asp Asn Phe Pro Leu Thr  
          85            90            95

Phe Gly Gly Gly Thr Lys Val Glu Ile Lys  
          100            105

<210> 40

<211> 126

<212> PRT

<213> Homo sapiens

<400> 40

Gln Val Thr Leu Lys Glu Ser Gly Pro Thr Leu Val Lys Pro Thr Gln  
1            5            10            15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Arg Thr Thr  
          20            25            30

Gly Glu Gly Val Gly Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu  
          35            40            45

Trp Leu Ala Leu Ile Tyr Trp Asp Asp Asp Lys Arg Tyr Ser Pro Ser  
Page 33

50 55 60

Leu Lys Ser Arg Leu Thr Ile Thr Lys Asp Thr Ser Lys Lys Gln Val  
65 70 75 80

Val Leu Thr Met Thr Asn Val Asp Pro Ala Asp Thr Ala Thr Tyr Tyr  
85 90 95

Cys Thr His Glu Gln Tyr Tyr Tyr Asp Thr Ser Gly Gln Pro Tyr Tyr  
100 105 110

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser  
115 120 125

<210> 41

<211> 107

<212> PRT

<213> Homo sapiens

<400> 41

Asn Ile Gln Val Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
1 5 10 15

Asp Arg Val Thr Met Thr Cys Arg Ala Ser Gln Asp Ile Arg Lys Asn  
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Val Leu Ile  
35 40 45

Tyr Asp Ala Ser Asp Leu Glu Thr Gly Ile Pro Ser Arg Phe Ser Gly  
50 55 60

Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Leu Gln Pro  
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Ser Asp Tyr Leu Pro Leu  
Page 34

85

90

95

Thr Phe Gly Gly Gly Thr Lys Val Asp Ile Lys  
100 105

<210> 42

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Linker Sequence

<400> 42

Gly Gly Gly Gly Ser  
1 5

<210> 43

<211> 21

<212> PRT

<213> Homo sapiens

<400> 43

Arg Leu Lys Gly Ala Trp Leu Leu Ser Glu Pro Pro Tyr Phe Ser Ser  
1 5 10 15

Asp Gly Met Asp Val  
20

<210> 44

<211> 9

<212> PRT

<213> Homo sapiens

<400> 44

Arg Thr Val Ala Gly Thr Ser Asp Tyr  
1 5

<210> 45

<211> 17

<212> PRT

<213> Homo sapiens

<400> 45

His Glu Gln Tyr Tyr Tyr Asp Thr Ser Gly Gln Pro Tyr Tyr Phe Asp  
1 5 10 15

Phe

<210> 46

<211> 11

<212> PRT

<213> Homo sapiens

<400> 46

Ala Ala Trp Asp Glu Ser Leu Asn Gly Val Val  
1 5 10

<210> 47

<211> 9

<212> PRT

<213> Homo sapiens

<400> 47

Leu Gln His Asp Asn Phe Pro Leu Thr  
1 5

<210> 48

<211> 9

<212> PRT

<213> Homo sapiens

<400> 48

Gln Gln Ser Asp Tyr Leu Pro Leu Thr  
1 5

<210> 49

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 49  
ggagaattcg attatcaagt gtcaagtcca

30

<210> 50

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 50

cgcggtatcct tagagcggag gcaggaggcg g

31

<210> 51

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 51

ggagaattca ccagatctca aaaagaagg

29

<210> 52

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 52

cgcggtatcct tataatctta atgtctggaa att

33

<210> 53

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 53  
caggaattct ttggcctgaa t

21

<210> 54

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 54  
cgcggtatcct cagcagtgcg tcattccaag a

31

<210> 55

<211> 128

<212> PRT

<213> Artificial Sequence

<220>

<223> VH of antibody clone 15.150.11

<400> 55

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu  
1                    5                    10                    15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Gly His Asp  
Page 39

20 25 30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Glu Gly Leu Glu Trp Ile  
35 40 45

Gly Phe Ile Phe Phe Asp Gly Ser Thr Asn Tyr Asn Pro Ser Leu Asn  
50 55 60

Gly Arg Val Thr Ile Ser Leu Asp Thr Ser Lys Asn Gln Leu Ser Leu  
65 70 75 80

Arg Leu Thr Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Phe Cys Ala  
85 90 95

Arg Leu Lys Gly Ala Trp Leu Leu Ser Glu Pro Pro Tyr Phe Ser Ser  
100 105 110

Asp Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser  
115 120 125

<210> 56

<211> 116

<212> PRT

<213> Artificial Sequence

<220>

<223> VH of antibody clone 15.150.12

<400> 56

Gln Val Gln Leu Gln Gln Trp Gly Ala Gly Leu Leu Lys Ser Trp Gly  
1 5 10 15

Thr Leu Ser Leu Thr Cys Ala Val Ser Gly Ala Ser Phe Ser Gly Tyr  
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile  
Page 40



35 40 45

Gly Glu Ile Asn His Arg Gly Ser Thr Thr Tyr Asn Pro Ser Leu Asp  
50 55 60

Gly Arg Val Thr Ile Ser Leu Asp Thr Ser Thr Asn Gln Ile Ser Leu  
65 70 75 80

Lys Leu Thr Ser Met Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala  
85 90 95

Arg Thr Val Ala Gly Thr Ser Asp Tyr Trp Gly Gln Gly Thr Leu Val  
100 105 110

Thr Val Ser Ser  
115

<210> 57

<211> 126

<212> PRT

<213> Artificial Sequence

<220>

<223> VH of antibody clone 15.150.24

<400> 57

Gln Val Thr Leu Lys Glu Ser Gly Pro Thr Leu Val Lys Pro Thr Gln  
1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Arg Thr Thr  
20 25 30

Gly Glu Gly Val Gly Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu  
35 40 45

Trp Leu Ala Leu Ile Tyr Trp Asp Asp Asp Lys Arg Tyr Ser Pro Ser  
Page 41

50                      55                      60

Leu Lys Ser Arg Leu Thr Ile Thr Lys Asp Thr Ser Lys Lys Gln Val  
65                      70                      75                      80

Val Leu Thr Met Thr Asn Val Asp Pro Ala Asp Thr Ala Thr Tyr Tyr  
                    85                      90                      95

Cys Thr His Glu Gln Tyr Tyr Tyr Asp Thr Ser Gly Gln Pro Tyr Tyr  
                    100                      105                      110

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser  
                    115                      120                      125

<210> 58

<211> 110

<212> PRT

<213> Artificial Sequence

<220>

<223> VL of antibody clone 15.150.11

<400> 58

Asn Phe Met Leu Thr Gln Pro Pro Ser Ala Ser Gly Thr Pro Gly Gln  
1                      5                      10                      15

Arg Val Ser Ile Ser Cys Ser Gly Ser Ser Ser Asp Ile Gly Ser Asn  
                    20                      25                      30

Thr Val Asn Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu  
                    35                      40                      45

Ile Tyr Ser Asn Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser  
50                      55                      60

Gly Phe Lys Ser Gly Thr Ser Ala Ser Leu Val Ile Ser Gly Leu Gln  
Page 42

65                      70                      75                      80  
 Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Ala Trp Asp Glu Ser Leu  
                     85                      90                      95

Asn Gly Val Val Phe Gly Gly Gly Thr Lys Val Thr Val Leu  
                     100                      105                      110

<210> 59

<211> 107

<212> PRT

<213> Artificial Sequence

<220>

<223> VL of antibody clone 15.150.12

<400> 59

Glu Thr Thr Leu Thr Gln Ser Pro Ala Phe Met Ser Ala Thr Pro Gly  
 1                      5                      10                      15

Asp Lys Val Ser Ile Ser Cys Lys Ala Ser Arg Asp Val Asp Asp Asp  
                     20                      25                      30

Val Asn Trp Tyr Gln Gln Arg Pro Gly Glu Ala Pro Ile Phe Ile Ile  
                     35                      40                      45

Glu Asp Ala Thr Thr Leu Val Pro Gly Ile Ser Pro Arg Phe Ser Gly  
                     50                      55                      60

Ser Gly Tyr Gly Thr Asp Phe Thr Leu Thr Ile Asn Asn Ile Asp Ser  
 65                      70                      75                      80

Glu Asp Ala Ala Tyr Tyr Phe Cys Leu Gln His Asp Asn Phe Pro Leu  
                     85                      90                      95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys

100

105

<210> 60

<211> 107

<212> PRT

<213> Artificial Sequence

<220>

<223> VL of antibody clone 15.150.24

<400> 60

Asn Ile Gln Val Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
1 5 10 15

Asp Arg Val Thr Met Thr Cys Arg Ala Ser Gln Asp Ile Arg Lys Asn  
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Val Leu Ile  
35 40 45

Tyr Asp Ala Ser Asp Leu Glu Thr Gly Ile Pro Ser Arg Phe Ser Gly  
50 55 60

Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Leu Gln Pro  
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Ser Asp Tyr Leu Pro Leu  
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Asp Ile Lys  
100 105